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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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09/944,665

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Toshiharu Furukawa

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12/03/2003

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EXAMINER

LOKE, STEVEN HO YIN

ART UNIT

PAPER NUMBER

2811

DATE MAILED: 12/03/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/944,665

Applicant(s)

FURUKAWA ET AL.

Examiner

Steven Loke

Art Unit

2811

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 October 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-44 is/are pending in the application.
- 4a) Of the above claim(s) 11-17 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1 and 6 is/are allowed.
- 6) ☒ Claim(s) 2-5, 18-44 is/are rejected.
- 7) ☒ Claim(s) 7-10 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

1. Claims 5, 7-10, 21 and 35 are objected to because of the following informalities: Claim 5, line 2, the phrase "said gate structure" has no antecedent basis. Claim 7, line 1, the phrase "said gate structure" has no antecedent basis. Claim 8, line 3, the phrase "said insulator material" and line 4, the phrase "said pillar" have no antecedent basis. Claim 9, lines 3, 4, 5, the phrase "said pillar" and lines 4-5, the phrase "said gate structure" have no antecedent basis. Claim 10, line 2, the phrase "said gate structure" has no antecedent basis. Claim 21, line 1, the phrase "said gate" has no antecedent basis. Claim 35, line 2, the phrase "SOI" should be in full form. It should rewrite as "Silicon-on-insulator". Appropriate correction is required.

2. Claim 3 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Fig. 37C discloses a borderless gate contact opening [3720] is formed through a resists [3710] and the nitride [3510]. The specification never discloses said at least one contact is formed in an opening in said isolation material adjacent said insulator material to a conductive region at an end of said pillar as claimed in claim 3. Only fig. 38C shows a borderless drain contact is formed in an opening in the isolation material [2620] adjacent said layer of insulator [3010] to a conductive region [2520, 3530] at an end of the pillar.

3. Claims 2-5 and 18-44 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 2, lines 2-3, the phrase "isolation material adjacent said layer of insulator surrounding said vertical transistor" is unclear. It is believed that it should rewrite as "isolation material adjacent said layer of insulator and surrounding said vertical transistor".

Claim 4, line 5, the phrase "an insulating sidewall" is unclear whether it is similar to the sidewall of claim 1 (line 6).

Claim 5, line 2, the phrase "said trench" is unclear as to which trenches is it being referred to. There is more than one trench in claim 1 (line 3).

Claim 18, lines 3, 4, 5, 8, the phrase "first diffusion" is unclear whether it is being referred to "first diffusion region"; lines 4, 5, 6, the phrase "second diffusion" is unclear whether it is being referred to "second diffusion region".

4. Claims 1 and 6 are allowed.

5. Claim 18 would be allowable if rewritten or amended to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action.

6. The following is a statement of reasons for the indication of allowable subject matter: The first major difference in the claims not found in the prior art of record is a vertical field effect transistor including at least one contact that is borderless to the gate electrodes. The second major difference in the claims not found in the prior art of record is an integrated circuit device including at least one contact that is borderless to

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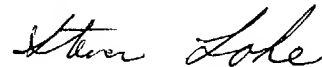
the gate electrode structure. The third major difference in the claims not found in the prior art or record is a transistor comprising a contact to the first diffusion region borderless to the gate structure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Steven Loke whose telephone number is (703) 308-4920. The examiner can normally be reached on 7:50 am to 5:20 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eddie Lee can be reached on (703) 308-1690. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

sl
December 1, 2003

A handwritten signature in cursive script, appearing to read "Steven Loke".